

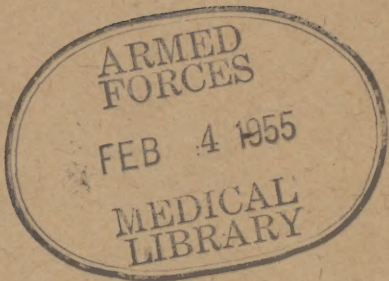
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X-RAY APPARATUS AND RADIOLOGICAL
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REPORT OF X-RAY APPARATUS AND
RADIOLOGICAL ACTIVITIES IN FRANCE

DECEMBER 1944

REPORT BY

LT. COL. A.R. GREATBATCH
ARMAMENT RESEARCH DEPARTMENT

CIOB BLACK LIST ITEM 27
INSTRUMENTS AND EQUIPMENT

COMBINED INTELLIGENCE OBJECTIVES SUB-COMMITTEE
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C.I.O.S.

Visit to Paris. December 1944

Messrs. Philips.

M. Spaans - Director
M. Botiaux - Head of X-ray Department.

1. There are about 75 principal users of Philips X-ray apparatus in France, about 12 of whom have obtained their apparatus during the occupation period.

The firm have no knowledge of any special applications which may have been developed during the the war, but they suggested that the following establishments should be visited:-

Marine Nationale, Etablissement d'Indret,
St. Lazaire

Forges & Chantiers de la Mediterranee, Toulon

Compagnie de Produits Chimiques et Electrometallurgiques alais Forges & Carmargue,
Chambery, Savoie.

2. Very little X-ray apparatus is now available in France and spares are practically non existent.

On account of our urgent requirements the firm were prepared to let U.K. have the only available 300 kilovolt X-ray tube insert they hold and accordingly arrangements were made to collect it and ship it to London by air. We were asked to return it if by chance it should be found that the tube cannot be used in our existing equipment.

3. M. Spaans was in control of the Philips' works in Eindhoven during the occupation and he confirmed the news that the Germans had removed train loads of equipment just prior to their departure.

He also said that the damage to the works by British bombs would have been vastly greater had the Germans not removed a number of delay bombs which had dropped in particularly vulnerable positions.

L'Institut du Radium

Professor Lacassagne
M^{me}. Joliot-Curie
Dr. Latarget
Dr. P. Bonet-Maury
M^m. R.J. Walen

1. The work of the Institut was never stopped during the occupation. Buildings and equipment, including radium are intact.

2. A new method of purifying radon has been developed during the war. It comprises an automatic circulation of the gases in a Cu-CuO purification system followed by the usual separation by sharing.

The method is reputed to give a very high yield and high concentration. It is very rapid and reduces the risk to personnel of the dangers of radiation. Seeds of 800 milli-curies are used for neutron sources.

A separate report on this development will be made as soon as possible.

Etablissements Barbier,
Bernard & Turenne,
Rue Curial

1. A visit was made to these works with representatives of R.A.E. Farnborough and of SHAEF Economic Mission, Paris.

2. A details report on their own activities is being made by the officers from Farnborough and it is noted here that the firm said that they had no radiological facilities of any kind.

3. Later, through another channel, it was found that the Blanc-Misseron division of the firm were using X-rays to examine welding etc. A report on these activities is given in Appendix A.

Le Matériel Téléphonique

1. Professor Tournier uses X-ray diffraction methods employing detection by ionisation to control the cutting of quartz crystals.

There is nothing unusual in the method or the application, which has also been developed in America where it is now used on a large scale.

2. Professor Tournier did not know of any work being done in France on the application of supersonics to the detection of defects in materials.

Report by Lt.Col. A.R. Greatbatch
(Armament Research Department).

December, 1944.

APPENDIX A

C.I.O.S.

Barbier, Bernard & Turenne
Division de Blanc-Misseron

Report on Radiological Activities, Dec. 1944

1. The information for this report was given by M. Flamme, Director, and M. Regnier, Engineer.
2. The works suffered extensive damage in 1940 and M. Flamme's house adjacent to them was completely demolished. The house was entirely rebuilt by the Germans in 1942 but the firm itself had to carry out all repairs to the factory.
3. The 200 kv. Philips X-ray set No. 22805 Type 11720 which had been installed before the war was removed by the Germans to an unknown destination in June 1940.
4. The output of the factory during the occupation averaged 40 per cent. of the pre-war output, and today it is only 25 per cent, the works being open only on 4 days of the week.

No work was done for the Germans, very few of whom were seen in Blanc-Misseron itself.

All contracts were for the local mining and petrol refining industries, etc. The items included considerable numbers of reaction chambers for the synthetic manufacture of petrol and benzene, containers for butane and propane, mining equipment, etc.

5. The firm purchased a new X-ray set in 1940 but could only obtain a 150 kv. mobile equipment (Philips). This has been in continual operation since except for occasional breakdowns due to H.T. cable failures. Thicknesses up to 2 inches of steel have been examined; but the exposure with such a moderately powered X-ray set is necessarily long - 20 minutes.

6. All longitudinal and circumferential welds in all pressure vessels such as boilers, reservoirs, reaction chambers etc. are examined 100 per cent. in accordance with the specifications issued by the American Petrol Institute A.S.M.E. 1934, and by the Groupement des Associations Francaises de Proprietaires d'Appareils a Vapeur - Specification Technique No. 12, 1938.

The standard of acceptability was initially controlled by the use of standard films, but these were found to be unsatisfactory and to contain "acceptable" defects which were in fact unacceptable.

Wire penetrameters of the German type are now used in preference to the slot type used formerly.

All welding is by hand and the repairs average 1.5% of the total length of welded seams, these defects appearing on 4 per cent. of the radiographs. The radiographic technique and control is generally of a very high standard.

7. The firm has designed and is constructing a union-melt welding plant. Work is progressing very slowly owing to scarcity of materials and it is not expected to be completed within a year.

A.R. Greatbatch,
Lt. Col.
December, 1944.

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